

## OCEAN GALES AND STORMS, MAY 1941

Vessel	Voyage		Position at time of lowest barometer		Gale began, May	Time of lowest barometer, May	Gale ended, May	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Gulfhawk, Am. M. S.	Las Piedras, Venezuela.	New York.	27 24 N.	74 18 W.	1 20	4a, 1		1,010.2	NE	NE, 7	NNE	ENE, 8	
Algic, Am. S. S.	Trinidad	Boston	37 26 N.	69 00 W.	2	4p, 2		31,005.4	NNE	NNE, 5	NE	NE, 8	None.
Gulfdawn, Am. S. S.	Port Arthur	Philadelphia	30 48 N.	79 30 W.	3	7p, 2		31,010.5	ENE	SSW, 4	ENE	NE, 8	SSW-W.
Nagara Maru, Jap. M. S.	Cristobal	New York	31 43 N.	74 03 W.	3	6a, 3		31,004.7	N	W, 4	N	N, 8	W-N.
Spencer, U. S. C. G.	On station No. 2		38 12 N.	45 30 W.	2	9a, 3		3,993.6	E	SSW, 7	NNW	E, 9	SE-SSW-NW.
Argentina, Am. S. S.	New York	Rio de Janeiro	1 24 N.	38 06 W.	2	3p, 3		31,009.1	E	ENE, 8	NE	ENE, 8	
Mojave, U. S. C. G.	On station No. 1		39 30 N.	58 54 W.	4	7a, 4		4,993.6	S	S, 8	WSW	S, 8	S-SW.
Spencer, U. S. C. G.	On station No. 2		38 36 N.	45 42 W.	5	2p, 5		51,002.0	SE	S, 8	WSW	SE, 9	SE-SSW.
Spencer, U. S. C. G.	On station No. 2		38 18 N.	46 30 W.	7	5a, 7		71,006.4	S	SW, 8	WNW	SW, 8	S-SW.
Mojave, U. S. C. G.	Newport	Station No. 1	39 12 N.	66 24 W.	14	1a, 15		151,006.4	N	NW, 6	WNW	NW, 10	NNW-NW.
Hamilton, U. S. C. G.	Norfolk	Station No. 2	36 42 N.	69 12 W.	18	1p, 17		181,004.4	WSW	SW, 3	WSW	WSW, 8	None.
Tampa, U. S. C. G.	On station No. 1		39 13 N.	59 18 W.	24	2a, 25		251,011.5	S	SSW, 8	SSW	SSW, 8	SSW-WNW.
Tampa, U. S. C. G.	On station No. 1		39 18 N.	59 18 W.	26	2a, 27		271,018.0	SW	WSW, 9	WNW	WSW, 9	SW-WNW-ENE.
General Greene, U. S. C. G.	Ice patrol		52 43 N.	44 29 W.	28	10a, 28		291,002.4	WSW	SW, 7	WSW	WSW, 8	SSW-WSW.
Tampa, U. S. C. G.	On station No. 1		39 42 N.	61 12 W.	29	5p, 29		301,001.4	W	WNW, 9	NNW	NW, 9	WSW-NW.
Hamilton, U. S. C. G.	On station No. 2		38 54 N.	45 54 W.	30	9a, 30		301,005.8	SSW	WSW, 8	S	WSW, 8	S-SW.
General Greene, U. S. C. G.	Ice patrol		48 02 N.	51 51 W.	30	2p, 30		30,970.5	S	NNW, 5	W	ENE, 10	ENE-NW.
NORTH PACIFIC OCEAN													
President Coolidge, Am. S. S.	Yokohama	Honolulu	35 05 N.	151 30 E.	1 30	12p, 30		2,989.2	E	W, 5	NNW	W, 11	S-W.
A vessel.	Los Angeles	Vladivostok	40 42 N.	169 42 E.	2	2a, 2		2,995.3	E	ENE, 6	N	NE, 9	E-NE.
Satartia, Am. S. S.	Catubangan, P. I.	Los Angeles	41 42 N.	149 00 W.	2	10p, 2		3,991.9	SSE	SSW, 5	WSW	WSW, 9	S-SW.
Aurora, Am. M. S.	Los Angeles	Vladivostok	45 15 N.	153 05 E.	3	2p, 3		31,004.1	SSW	SW, 9	SW	SW, 9	SSW-SW.
Coldbrook, Am. M. S.	Yokohama	Vancouver, B. C.	49 30 N.	131 30 W.	3	4p, 4		3,990.9	SSE	SSE, 6		ESE, 8	
Pioneer, U. S. C. & G. Survey.	San Francisco	Dutch Harbor	45 06 N.	134 30 W.	4	3p, 4		5,993.9	SW	W, 7	W	WSW, 9	SW-W.
J. A. Moffett, Am. S. S.	do	Seward	46 54 N.	130 00 W.	4	1a, 5		5,992.6	WSW	WNW, 9	WSW	WNW, 9	WNW-WSW.
A vessel	Los Angeles	Vladivostok	41 42 N.	142 18 E.	5	4p, 5		5,995.3	S	W, 10	WSW	W, 11	S-W.
Aurora, Am. M. S.	do	do	42 30 N.	145 00 E.	5	4a, 5		5,986.8	SE	SE, 8	SE	SE, 9	SE-S.
China Arrow, Am. S. S.	Vladivostok	Los Angeles	49 12 N.	165 00 W.	9	1p, 9		91,004.4	SE	SE, 8	SSE	SE, 8	SE-SSE.
St. Mihil, U. S. A. T.	Dutch Harbor	Seward	54 06 N.	163 00 W.	9	7p, 9		101,009.1	SE	SE, 9	SE	SE, 9	
Pioneer, U. S. C. & G. Survey.	San Francisco	Dutch Harbor	53 42 N.	164 06 W.	9	11a, 10		101,000.0	SSE	SSW, 4	SE	SE, 9	None.
Sanyo Maru, Jap. M. S.	Yokohama	San Francisco	46 42 N.	176 06 E.	10	12p, 11		101,006.1	S, 6	SW, 6	SSE	SW, 8	NW-W.
Maliko, Am. S. S.	Honolulu	do	34 12 N.	133 06 W.	10	3p, 10		11,999.3	NW	WNW, 7	NW	NW, 9	NW-W.
President Monroe, Am. S. S.	San Francisco	Honolulu	34 56 N.	131 40 W.	10	4p, 10		11,991.9	SE	WSW, 9	NNW	WSW, 9	SE-W.
Steel Navigator, Am. S. S.	do	do	35 00 N.	131 30 W.	10	2p, 10		11,990.9	SE	SSE, 7	WNW	WSW, 9	S-SSE-W.
Matsonia, Am. S. S.	do	do	35 30 N.	126 12 W.	10	6p, 10		11,989.5	S	SW, 7	NW	W, 9	S-W.
John R. R. Hannay, U. S. A. T.	Pearl Harbor	San Francisco	37 21 N.	138 35 W.	10	2a, 11		111,000.7	NW	NW, 8	N	N, 8	NW-N.
Makaweli, Am. S. S.	Honolulu	do	31 18 N.	140 12 W.	9	4a, 11		121,012.9	NNW	NW, 7	NW	NW, 8	N-NW.
Pomona, Am. S. S.	Balboa	Los Angeles	14 33 N.	95 15 W.	12	4a, 13		131,012.2	N	NNE, 7	NE	NNE, 7	N-NW.
W. S. Miller, Am. S. S.	Shanghai	San Francisco	24 00 N.	168 44 W.	16	2a, 17		17,987.8	SSW	SSW, 9	W	SSW, 9	SSW-W.
Aurora, Am. M. S.	Vladivostok	Los Angeles	48 55 N.	169 20 W.	24	4a, 24		241,000.7	SE	SE, 9	SSW	SE, 9	SE-S.
Pioneer, U. S. C. & G. Survey.	Surveying near Aleutian Islands		52 18 N.	172 36 W.	24	1p, 24		24,979.7	SE	SE, 5	SW	SE, 9	ENE-SSW.
Discoverer, U. S. C. & G. Survey.	Surveying near Alaska Peninsula		55 06 N.	161 30 W.	24	6p, 24		251,011.9	ESE	SSE, 7	SSW	SSE, 8	ESE-SSE.
Pioneer, U. S. C. & G. Survey.	Surveying near Aleutian Islands		52 42 N.	172 30 W.	26	9p, 26		27,996.6	ESE	S, 5	SW	ESE, 11	SE-SW.

<sup>1</sup> April.<sup>2</sup> Position approximate.

## WEATHER ON THE NORTH PACIFIC OCEAN

By WILLIS E. HURD

**Atmospheric pressure.**—The Aleutian Low filled in rapidly, following its considerable depth in April, and in May lay as a great shallow depression stretching across the Aleutian Islands and the adjoining waters of the northern Pacific and the Bering Sea, average pressure about 1,009 millibars (29.80 inches) to slightly lower. Throughout this region the barometer was about 1 to 3 millibars below the normal of the month.

Anticyclones lay over much of the east-central part of the ocean through most of the month, and on several days extended northward into the Gulf of Alaska. The average center lay over and to the eastward of Midway Island. At this station the mean pressure, 1,022.6 millibars (30.20 inches), was 5 millibars (0.15 inch) above the May normal.

Low pressure lay over the extreme southwest, where the continental depression from China was slowly spreading over the adjacent sea.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean May 1941, at selected stations

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	Millibars	Millibars		Millibars	
Barrow	1,014.3	-4.7	1,030	11	1,000	31
Dutch Harbor	1,008.8	-1.7	1,024	21, 26	988	1
St. Paul	1,007.9	-3.3	1,027	10, 24, 27	990	13, 25
Kodiak	1,010.0	-0.5	1,025	21	992	4, 18
Juneau	1,012.9	-2.7	1,034	21	992	15
Tatoosh Island	1,015.2	-1.1	1,032	20	997	4
San Francisco	1,015.9	+0.3	1,024	5	1,003	10
Mazatlan	1,010.5	-0.3	1,013	16	1,006	18
Honolulu	1,015.9	-1.7	1,020	1	1,012	21
Midway Island	1,022.6	+5.0	1,028	21	1,016	2
Guam	1,010.8	-1.0	1,020	24	1,009	16
Manila	1,009.1	+1.0	1,014	4	1,006	19, 27
Hong Kong	1,009.5	+1.0	1,014	15, 16	1,003	26
Naha	1,012.5	+3.7	1,019	1	1,003	26
Titilima	1,015.1	+2.2	1,023	1, 2, 15	1,009	27
Petropavlovsk	1,008.9	-1.3	1,023	25	992	3

<sup>1</sup> And on other dates.

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

*Cyclones and gales.*—Cyclonic activity was confined to the western, northern, and eastern parts of the ocean. On a great expanse of middle waters south of the 40th parallel there were few disturbances and the weather was for the most part settled.

Early in the month some storminess occurred over both northwestern and northeastern quadrants of the Pacific within the period 1st to 5th. Early on the 1st the American S. S. *President Coolidge*, Yokohama to Honolulu, ran into fresh gale winds in the morning near 35° N., 152° E. In the afternoon the wind rose to force 11 from the west. During much of the night and the early morning of the 2d, gales continued of force 10, finally moderating to force 7 late in the afternoon. A vessel to the northeast of her, near 41° N., 170° E., on the 2d, had a highest velocity of force 9 from the northeast. On the 3d and 5th, associated with a cyclone over northern Japanese waters, three vessels reported southerly gales of force 9 south and east of the Kuril Islands.

On May 3 to 5 a moderately deep cyclone affected the northeastern Pacific, and was central off Queen Charlotte Island on the 5th. It caused force-9 gales at some distance west of the Washington coast on the 4th and 5th, the nearest of which to the mainland was encountered by the American S. S. *J. A. Moffett* near 47° N., 130° W., during the night of the two dates.

On the eastern half of the California-Hawaiian routes a disturbance appeared near 30° N., 135° W., on the 9th and disappeared close to the central California coast on the 13th. In connection with it, gales of force 8-9 occurred on the 10th and 11th roughly within the area 30° to 40° N., and from near the central California coast westward to about 140° W. The lowest barometer, 989.5 millibars (29.22 inches) was reported on the 10th, near 36° N., 126° W., by the American S. S. *Matsonia*.

Most storminess along the northern trans-Pacific routes occurred south of the central and eastern Aleutians during two periods of cyclonic activity, the 9th and 10th and the 24th to 26th. Southeasterly gales of force 8 to 9, accompanied by only a small depression of the barometer, were reported on the 9th and 10th south and east of the vicinity of Dutch Harbor.

From the 24th to 26th the deepest cyclone of the month moved northward across the central Aleutians into the Bering Sea, causing southeasterly gales along the eastern half of the group and vicinity, and south of the western part of the Alaska Peninsula. The United States Coast and Geodetic Survey vessel *Pioneer* recorded the lowest known barometer of the month, 979.7 millibars (28.93 inches), near 52° N., 173° W., on the 24th, preceded by a force-9 gale. The same vessel on the 26th encountered an east-southeast gale of force 11 in practically the same position.

In the Gulf of Tehuantepec a northeaster of force 7 occurred on the 13th, associated with high pressure over the western Gulf States.

*Fog.*—With advance of spring, the usual increase in fog on the North Pacific was seen this month. But while normally the greatest increase occurs on northwestern waters, this year in May the rise in fog frequency was distributed along practically the entire extent of the northern and central routes. The majority of 5° ocean areas between 35° and 50° N., had from 1 to 3 days with fog, as well as several such areas between 30° and 35° N. Fog was reported on 4 days in the western part of the Japan Sea, and on 4 days along the eastern shore of the Gulf of Alaska. California coastal waters had 9 days and Lower California waters 8 days on which fog was observed.

## RIVER STAGES AND FLOODS

By BENNETT SWENSON

Except in the middle Plains States and Wyoming, precipitation during May was above normal throughout the western half of the country with amounts far above normal in most States. Minnesota, Wisconsin, and Louisiana had more than the usual amount for this month, but in all other States east of the Plains the amounts were below normal. Deficiencies were especially large from Kentucky and Virginia southward. South Carolina had only 13 percent of normal, Alabama 16 percent, and Georgia and Tennessee 26 percent. It was the driest May of record in Kentucky, Tennessee, Alabama, and South Carolina, and the second driest in Virginia, North Carolina, Georgia, and Mississippi.

For the winter and spring season (December to May) the East Central States, the entire Atlantic Seaboard except Florida, and the far Northwest showed a decided deficiency in precipitation.

*Atlantic Slope and east Gulf of Mexico drainage.*—Floods were entirely absent in this area and river stages were unusually low during May, except for flood stage at Pearl River, La., in the Pearl River, continuing from April until May 3. The mean monthly stage of the Connecticut River at Hartford, Conn., was 3.2 feet which is the lowest May mean river stage of record and the lowest reading of .0 foot during the month set a record low for May. Stream flow was considerably below normal in the Susquehanna River and approached a new all time low flow at Harrisburg, Pa., for May. In the Gulf drainage a low stage of 0.26 feet at Enterprise, Miss., on the Chickasawhay River, is the lowest stage of record for May in 37 years of record.

*Upper Mississippi Basin.*—From May 26 to the close of the month a quasi-stationary front extended in an east-west direction over the upper Mississippi River basin, situated between central Minnesota and central Iowa most of the time. Moderate to heavy rains occurred over this area during this time resulting in light to moderate flooding, and severe flooding in some localities.

Rains fell at a highly excessive rate in extreme northeastern Iowa and caused severe local flooding in this area. Reports on flood damages have not been obtained at this time.

Cautionary warnings were issued for the Root River and the Wisconsin River at Knowlton, Wis., stating that stages would approach flood stage. The damage from the high water was slight and confined to crop losses in the lowlands.

Stages in the main channel of the Mississippi River showed a gradual recession from the high water of April which was due to melting of the snow cover in the headwaters. The river was below flood stage except in the vicinity of Hannibal and Louisiana, Mo., where stages continued above flood during the first week of May.

*Missouri River Basin.*—A mass of Polar Maritime air moved rapidly southeastward across Nebraska and Kansas on May 19 and 20 with a cold front separating it from the tropical air to the south and east. Heavy rains occurred along the Kansas-Nebraska boundary as the warm moist air was lifted over the cold air mass. The rains were heavy over the Republican River watershed generally and especially on Medicine Creek. This creek was 4 feet above bankful during the night of the 19th and in the main channel the Republican River reached bankful and slightly above for about 15 miles in the vicinity of Guide Rock and Superior, Nebr.